

UNI  
8128

MUS. COMP. ZOOL.  
LIBRARY

DEC 21 1981

OCCASIONAL PAPERS

HARVARD  
UNIVERSITY

of the  
MUSEUM OF NATURAL HISTORY  
The University of Kansas  
Lawrence, Kansas

NUMBER 95, PAGES 1-12

NOVEMBER 25, 1981

A NEW SPECIES OF STEAMER-DUCK  
(*TACHYERES*) FROM ARGENTINA

by

PHILIP S. HUMPHREY<sup>1</sup> AND MAX C. THOMPSON<sup>2</sup>

Steamer-ducks (*Tachyeres*) are relatively large diving ducks occurring in marine coastal and freshwater environments in southern South America and the Falkland Islands. The various species of steamer-ducks are so similar in appearance and size that many authors (see review in Murphy, 1936:951-972) considered them a single species, some members of which were flightless and others not. Murphy (1936:951-972) studied extensive series of study skins of the genus and recognized a single widely distributed flying species, *patachonicus* (Falklands and Fuego-Patagonia), and two flightless species, one in the Falklands (*brachypterus*) and the other (*pteneres*) in Tierra del Fuego and along the Southern coast of Chile. He (Murphy 1936:958, 960, 969) believed that *pteneres* did not occur along the Patagonian coast and that *patachonicus* occurred only as far north as Latitude 48° S (Puerto Deseado). Subsequent publications (Bo 1958:39; Blake 1977:227-778; Boswall and Prytherch 1972:125; Daciuk 1977:376; Jehl, et al. 1973:61; Johnsgard 1979:452-453; Olrog 1979:50; Zapata 1967:364; Zapata 1969:23) list records of steamer-ducks identified as either *pteneres* or *patachonicus* along the coasts of Santa Cruz (Río Gallegos, Puerto Deseado, Mazarredo), and Chubut (Isla Quintano, Punta Tombo, Punta Ninfas, Península Valdez); most of these are based

<sup>1</sup> Director, Museum of Natural History and Professor, Department of Systematics and Ecology, The University of Kansas, Lawrence, Kansas 66045, U.S.A.

<sup>2</sup> Associate Professor, Department of Biology, Southwestern College, Winfield, Kansas 67156, U.S.A.

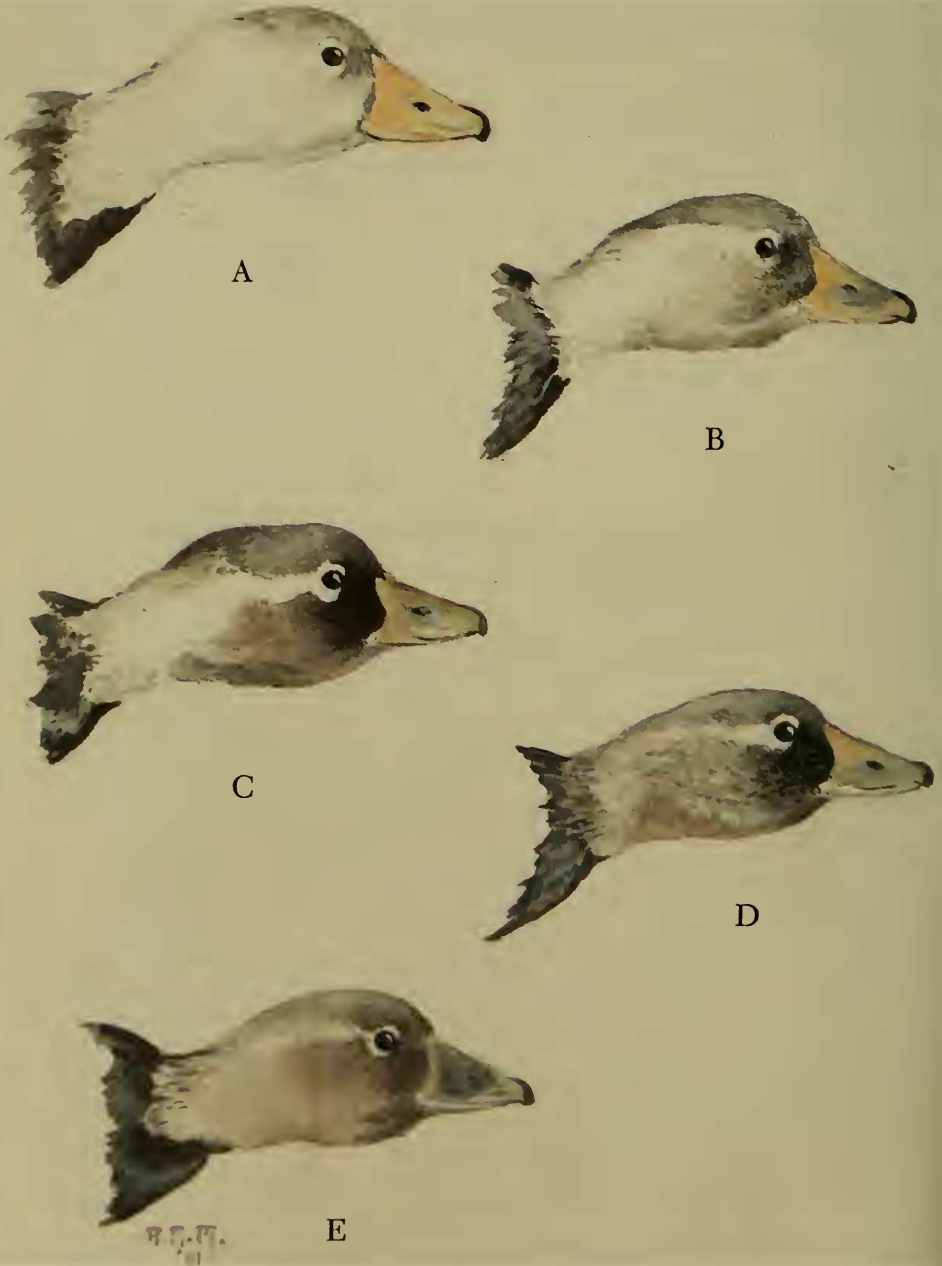


FIG. 1.—Head Plumages of White-headed Flightless Steamer Duck (*Tachyeres leucocephalus*). A, male definitive alternate; B, male definitive basic; C, female definitive alternate; D, female definitive basic; E, juvenal, both sexes (see text).

on sight observations. Scott and Sharp (1912:487) reported a specimen of *Tachyeres* from the province of Río Negro (mouth of the Río Negro) which we have examined and identified as *T. patachonicus*.

As far as we know, only one (Bo 1958:39) of the published records of steamer-ducks in the Province of Chubut is based on a specimen; it was identified by Bo as *T. patachonicus*.

Maurice Rumboll and Francisco Erize (pers. comm.) have suspected for some time that steamer-ducks seen along the coast of Chubut might be either the Falkland species (*brachypterus*), or an undescribed form, rather than *pteneres* or *patachonicus*. Olrog (1979:50) described the distribution of *T. brachypterus* as "Costas de las Malvinas y eventualmente en las de Chubut." Todd (1979:160) stated that "Maurice Rumboll . . . is of the opinion that nearly all of the flightless steamer ducks which occur from the Lemaire Channel (between the tip of South America and Staten Island) northward to the Valdez Peninsula are either Falkland Island steamer ducks or are representatives of an undescribed species (or, at the very least, a subspecies)."

Humphrey and Thompson collected 49 specimens of steamer-ducks September through November 1979 near Ushuaia, Tierra del Fuego, and along the coasts of Chubut and Santa Cruz, Argentina, and Humphrey and Bradley C. Livezey collected 59 additional specimens of the genus at Ushuaia, Puerto Deseado (Santa Cruz), and Puerto Melo (Chubut) December 1980 through February 1981.

Study of this material, which is still in progress, has raised many questions and suggests that our knowledge of the kinds and relationships of *Tachyeres* is in need of extensive revision, probably involving recognition of several new taxa; one of these is the abundant, large, flightless steamer-duck from Puerto Melo, and probably elsewhere, which is clearly distinct from all other known species of the genus.

*Tachyeres leucocephalus*

new species

WHITE-HEADED FLIGHTLESS STEAMER-DUCK

Holotype.—Museo Argentino de Ciencias Naturales No. 52694; adult male from Puerto Melo, Provincia de Chubut, Argentina (Latitude 45° 01' S., Longitude 65° 50' W.), collected 24 September 1979 by Max C. Thompson and Philip S. Humphrey (PSH 1398).

Diagnosis.—A medium-sized, sexually dimorphic, flightless steamer-duck. Head of adult males in alternate plumage predomi-

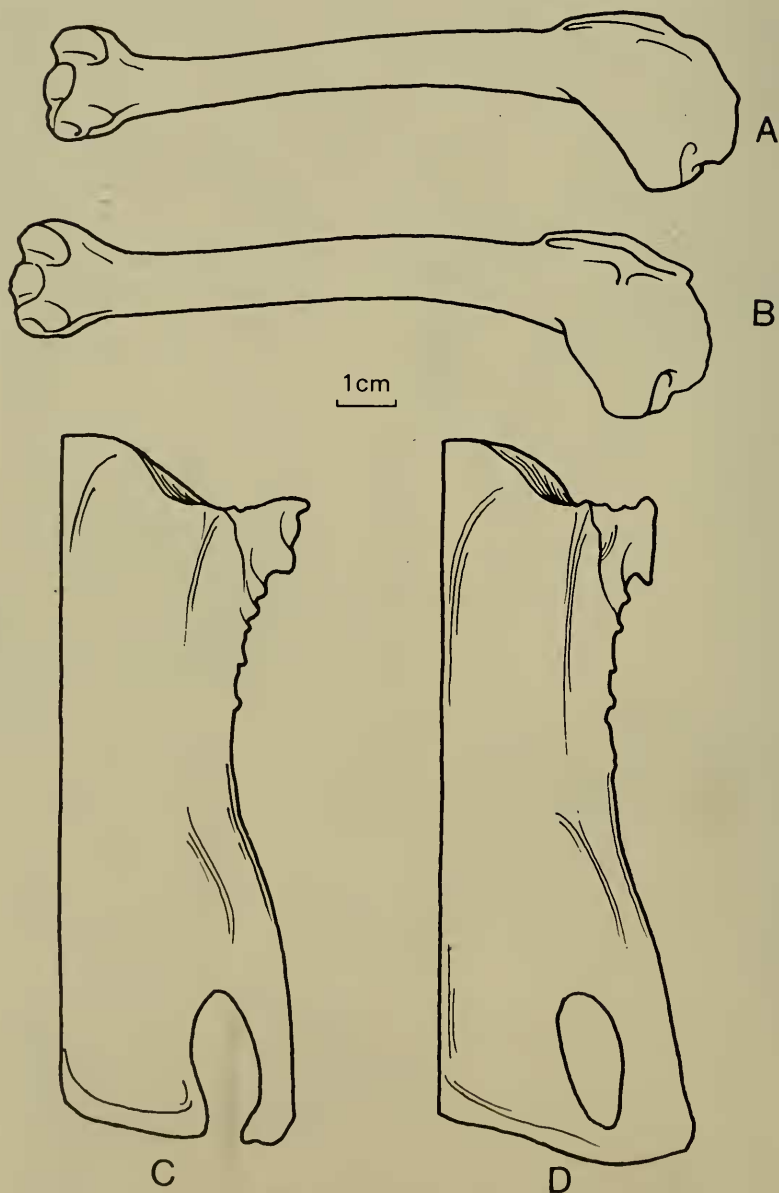


FIG. 2.—Humeri and sterna of *Tachyeres brachypterus* (A, C) and *T. leucocephalus* (B, D), males. Note the thick shaft characteristic of all humeri of *T. leucocephalus* in contrast to the slender more tapering shaft of the humerus of *T. brachypterus*. The xiphoid region of the sternum of *T. leucocephalus* is consistently broader and flared more laterally than in *T. brachypterus* and the posterior lateral process is much wider.

TABLE 1.—Means and ranges of measurements of male steamer-ducks. All measurements by Humphrey; measurements of *T. brachypterus* from specimens not collected by the authors; those of *T. pteneres* and *T. patachonicus* are from specimens collected by the authors and by others.

	n	Exposed culmen	Nail width	Wing (arc)	Tarsus length	Digit III length
<i>T. patachonicus</i>	22	53 46-59	12 10-14	296 275-315	59 49-63	81 73-86
<i>T. leucocephalus</i>	12	55 51-63	12 11-13	279* 262-295	65 61-67	87 84-90
<i>T. brachypterus</i>	11	56 54-61	14 12-15	270 261-290	65 60-70	90 85-95
<i>T. pteneres</i>	23	60 54-70	16 12-18	273** 255-289	71 62-78	96 87-104

\*n = 9

\*\*n = 22

nantly white with light gray lores and cap becoming paler posteriorly and patch of light chestnut on throat. Female smaller than male; head of adult in alternate plumage with dark gray crown, reddish-brown lores and cheeks, broad white postocular streak widening posteriorly to fuse with broad white collar at base of neck, throat medium cinnamon bordered with medium gray.

*Tachyeres leucocephalus* is distinct from all known species in the genus in terms of various combinations of characters, including body weight, proportions of certain measurements, shape of humerus and posterior region of sternum, and coloration of the feathering of the head and neck in various plumages.

*T. leucocephalus* differs from *T. brachypterus* as follows: 1) humerus broad, heavy, and with little taper; it is more slender and tapering in *brachypterus* (Fig. 2); 2) posterior part of sternum broadly flared; it is not flared laterally in *brachypterus* (Fig. 2); 3) external lateral process of sternum wide; it is much narrower in *brachypterus* (Fig. 2); 4) mean body weight lighter sex for sex (Table 3); 5) means of nail width and length of digit III smaller but there is considerable overlap in these and other external measurements (Table 1); 6) adults of both sexes lack the yellowish or golden collar at the base of the neck characteristic of *brachypterus* (Murphy 1936:964); 7) adult females have wide, prominent postocular streak and a more strikingly patterned head and neck.

The new species differs from *T. pteneres* in: 1) lower body weight (Table 3) and correspondingly small skeletal elements of trunk and hindlimb; 2) lower wing loading (Table 2); 3) mean number of lamellae per cm in upper bill is 6.5 (males) and 7.0

TABLE 2.—Means and ranges of ratios of lengths of femur and humerus and wing loading for male steamer-ducks.

	n	Femur/Humerus	n	Wing loadings (gms/cm <sup>2</sup> )
<i>T. patachonicus</i>	27	0.59 (0.57-0.62)	22	2.37 (2.03-2.83)
<i>T. leucocephalus</i>	17	0.66 (0.64-0.67)	6	3.18 (2.91-3.40)
<i>T. pteneres</i>	10	0.68 (0.67-0.70)	10	4.90 (4.35-6.01)
<i>T. brachypterus</i>	1	0.64	0	

(females) and there is no overlap in this character with *pteneres* which have 5.2 (males) and 5.9 (females) per cm; 4) means of nail width and lengths of tarsus and digit III smaller but there is considerable overlap in these and other external measurements; 5) adult males have white heads most of the year in contrast to *pteneres* in which the head is light gray.

*T. leucocephalus* differs from *T. patachonicus* in 1) ratio of lengths of femur and humerus 0.64-0.67; it is 0.57-0.62 in *T. patachonicus* (Table 2); 2) mean lengths of tarsus and digit III larger (Table 1); 3) higher mean weight (Table 3); 4) higher wing loadings (Table 2); 5) mean ratio of lengths of tarsus and wing arc which is 0.23 (0.21-0.24); it is 0.20 (0.18-0.22) in *patachonicus*; 6) adult females have wide, prominent postocular streak and a more strikingly patterned head than those of *T. patachonicus*.

Mean measurements (mm, kg) and extremes: males (12), exposed culmen 55 (51-63), nail width 12 (11-13), wing (arc) 279 (262-295), tarsus 65 (61-67), digit III length 87 (84-90), weight (n = 11) 3.90 (2.70-4.40); females (8), exposed culmen 55 (54-57), nail width 12 (11-13), wing (arc) 271 (255-288), tarsus 63 (59-66), digit III length 84 (81-86), weight 2.95 (2.55-3.35).

Distribution.—Known from the vicinity of the type locality where it occurs along rocky shores of the mainland and islands,

TABLE 3.—Means and ranges of weights (g) of steamer-ducks. Weights for *T. brachypterus* (estimated means) from Weller (1976:47).

	n	Males	n	Females
<i>T. patachonicus</i>	27	3030 2350-3480	28	2425 1950-2900
<i>T. leucocephalus</i>	11	3790 2700-4400	8	2950 2550-3350
<i>T. brachypterus</i>	5	4334 4200-4650	4	3383 3100-3580
<i>T. pteneres</i>	7	5310 4950-5650	6	4328 3800-4820



from Punta Tombo, Chubut, where it has been photographed by Jeffery Boswall, Donaldo MacIver, and E. R. Parrinder (Boswall and MacIver 1979a), William Conway, and Francisco Erize, and from Camarones where it has been photographed by Roberto Stranek. It probably occurs in appropriate habitat along the coast of Chubut from Bahía Bustamante north perhaps as far as Puerto Madryn and Península Valdez.

Description of holotype.—Head mostly white, forehead and crown light gray, becoming paler posteriorly and slightly mottled with pale cinnamon where wear has exposed the bases of the feathers; lores light gray, mottled posteriorly with medium dusky brown and pearl gray feathers; upper and lower eyelids white; chin and neck white; small light chestnut patch on throat becoming slightly paler posteriorly; mantle, scapulars, back, rump, upper tail coverts, sides, and flanks predominantly medium pearl gray becoming paler on the upper back; most of the posterior mantle feathers and scapulars with paler, silvery gray patches around the dark rachis and darker gray (sometimes dusky) posterior margins, giving a scaled appearance; upper breast medium pearl gray, becoming predominantly dusky brown medially, with scattered light to medium chestnut where feather bases show; feathers of upper breast and sides of breast with narrow, pale smoke gray margins; feathers of the sides and flanks with a silvery or slightly metallic pale pearl gray wash, narrowly tipped with medium chestnut or pale smoke gray on the older, more worn feathers. Lower breast, abdomen, and under-tail coverts white. Wing with carpal and metacarpal knobs; primaries and greater upper primary coverts dark dusky brown with blackish brown shafts; rest of upper wing medium fuscous, some (newer) feathers darker and others (worn) very pale buffy brown. Secondaries (10) white, the inner vane of the innermost (eleventh) medium blackish-brown; tertials medium dusky brown, paler at the edges; innermost tertials quite worn, their frayed edges being very pale, almost whitish, buffy brown. Axillaries and central part of wing lining white; balance of underwing coverts medium dusky brown, the greater under primary coverts paler. Rectrices dark blackish brown, with black shaft and faint mesial wash of light silvery gray. Iris brown; bill orange, becoming greenish at tomium and yellowish near tip, the nail black; legs and feet bright yellow with claws blackish.

Measurements (mm) of holotype.—Wing arc 280, exposed culmen 56.2, width of nail 12.3, tarsus 66.4; weight 3.65 kg.

Specimens examined.—Skins (holotype at MACN, others deposited at Southwestern College) and partial skeletons: 4 males, MACN 52694 (holotype), KU 77930 (SC 3528), 77942 (SC 3533), 77943 (SC

3534); 3 females, KU 77926 (SC 3527), 77934 (SC 3530), 77936 (SC 3531). Freshly killed specimens subsequently prepared as complete skeletons: 13 males, KU 77925, 77928, 77931, 77933, 77935, 77938, 79234, 79235, 79236, 79237, 79243 (Juvenile), 79245, 79246, 79248; 11 females, KU 77927, 77979, 77937, 77939, 77941, 79238, 79239, 79240, 79241, 79247, 79249.

## DISCUSSION

The White-headed Flightless Steamer-Duck is an abundant species at Puerto Melo and presumably other localities with rocky shorelines along the coast of Chubut. The Flying Steamer-Duck has been collected at Puerto Melo (1 specimen) and may occur in small numbers in Atlantic coastal Chubut in sympatry with *T. leucocephalus*.

What are undoubtedly the nest and eggs of *T. leucocephalus* were described by Boswall and MacIver (1979a:75) and identified by them as pertaining to *T. patachonicus*. They found that 6 eggs in a nest at Punta Tombo, Chubut, "all . . . fall well outside the range of Murphy's figures (for eggs of *T. patachonicus* from the Fuegian region) and are much closer to the eggs of the larger Falkland Island Flightless Steamer Duck, *T. brachypterus* . . ." (Boswall and MacIver 1979b).

The molts and plumages of steamer-ducks are poorly understood. We know from studies now in progress that Flying Steamer-Ducks (*T. patachonicus*) have three molts and plumages per annual cycle (Humphrey and Livezey, in press). From examination of specimens and photographs of *T. leucocephalus*, we judge that adult birds of both sexes go through a complete prebasic molt in summer (February), shedding the remiges simultaneously, and then without interruption undergo a partial molt involving the head and neck and possibly other parts of the body. Adult males collected in September were white-headed as were those with worn wings collected in February before they had initiated the prebasic molt. The limited data at our disposal suggest that either adult males wear a white alternate plumage of the head and neck most of the year or that, if there is a supplemental plumage, it too is white. In what follows, we tentatively assume a two plumage cycle since we have no evidence to the contrary.

The definitive alternate plumage of the head and neck of males is predominantly white with a pale to medium gray cap which terminates anterior to the nuchal region, pale brownish in the anterior lores, and a relatively narrow patch of light cinnamon on the throat. Many males seen in bright sun in the field appear completely white-headed. Figure 1A illustrates a male with vestigial



bursa of Fabricius, fresh new wings and tail, and head and neck in what we judge to be definitive alternate plumage.

Although we have seen no males in full definitive basic plumage, we have examined birds in both prebasic and prealternate molt that have what we judge to be mixtures of alternate and basic plumages on the head and neck. The definitive basic plumage of males is probably similar in aspect to the definitive alternate plumage of females, having an extensive dark cap, medium reddish-brown cheeks and lores, broad white postocular streak, white collar at base of neck, an extensive patch of medium cinnamon on the throat, and medium gray on the sides of throat and chin. Figure 1B illustrates a specimen of an adult male (bursa of Fabricius absent) with new, short, remiges growing in and slight molt on the head. We believe this individual has mostly basic feathers on the head and neck and is beginning a prealternate molt.

The definitive alternate plumage of females has dark cap, reddish-brown cheeks and lores, prominent white postocular streak, and broad white collar at the base of the neck. Figure 1C is of a female with comparatively small bursa of Fabricius ( $28 \times 9$  mm), fresh, new wings, and head and neck in what we interpret to be definitive alternate plumage.

The head and neck of females in definitive basic plumage are medium to dark purplish-gray with a large dark cinnamon patch on the throat. Since we have examined no specimens in full basic plumage we cannot tell whether it lacks a postocular streak or has a very short white one. Figure 1D is of a female with vestigial bursa of Fabricius, old, worn wings, molting tail, and moderate molt in the head and neck. The bird appears to be well along in a prebasic molt and has head and neck with mostly basic feathering. We believe the full basic plumage of the head and neck would show no traces of white in the cheeks and collar and the postocular streak either absent or very short.

The juvenal plumage of the head and neck of both sexes (Figure 1E) has a dark brown cap extending to the nape, medium to dark reddish-brown cheeks and lores, lighter brown sides of neck and collar at base of neck, and an indistinct patch of medium cinnamon on the throat. The bill is blackish-gray with a broad, light bluish area bordering the black nail. The tarsus and foot are dull tan with blackish patches on the joints and blackish webs.

Most of the predefinitive plumages are unknown. A young male molting into what appears to be first alternate plumage has a dark cap extending to the nape, light brown cheeks becoming darker in the lores, medium cinnamon on the throat, white collar at the base of the neck, and a white postocular streak that broadens

posterior to the auricular region. We judge that the first alternate plumage of males is similar to the alternate plumage of females.

This is the first of several papers reporting the results of field and laboratory studies now in progress designed to characterize the taxa of steamer-ducks and their phylogenetic relationships and to finish testing hypotheses relating to the origins and adaptive significance of flightlessness in the genus.

### SUMMARY

A new species of flightless steamer-duck, *Tachyeres leucocephalus*, is described from the coast of the Province of Chubut, Argentina. The new species is much smaller than *T. pteneres* and approximately the same size as *T. brachypterus* of the Falkland Islands from which it differs in aspect and certain osteological characteristics.

### RESUMEN

Una nueva especie de pato vapor no volador ha sido descubierto en la costa de la Provincia de Chubut, República de Argentina. La nueva especie es *Tachyeres leucocephalus* y tiene aproximadamente el mismo tamaño de *T. brachypterus* de las Islas Malvinas del que se distingue por algunas características osteológicas.

### ACKNOWLEDGEMENTS

Our field research in Argentina would not have been possible without the generous assistance of many people and organizations. We are grateful to the following:

B. Mayer, Mr. and Mrs. F. V. T. J. Fauring and associates (Patagonia Comercial); Dr. O. Kuhnemann, J. Sesti and P. Medina (Centro de Investigación de Biología Marina); Dr. J. M. Gallardo, A. Bockel, and Dr. J. Navas (Museo Argentino de Ciencias Naturales "Bernardino Rivadavia"); Dr. E. O. Gonzalez Ruiz and colleagues (Dirección Nacional de Fauna Sylvestre); Ing. Qca. L. O. Saigg de Chialva (Directora de Protección Ambiental, Provincia de Chubut); Dr. D. H. Soria (Director General de Ganadería, Provincia de Santa Cruz); Dr. A. Tarak (Dirección Nacional de Parques Nacionales); Dr. G. A. Giaroli (Subsecretario de Recursos Naturales Renovables y Ecología de la Nación); F. Löbbe and F. Villar (Ceremonial, Ministerio de Economía); Sr. I. Torres (Braniff International); A. A. Gonzalez (Aerolíneas Argentinas); P. Canevari, W. Conway, F. B. Cross, B. de Ferradas, F. Erize, the Gibson family, R. Hamilton, B. C. Livezey, R. M. and M. Mengel, L.

Orquera, E. Piana, M. A. E. Rumboll, R. Stranek; M. L. Humphrey for her patience and enthusiastic support; R. M. Mengel for preparing the color plate and D. Bennet the line drawing; R. M. Mengel and anonymous reviewers for suggesting improvements in the manuscript; the authorities of the American Museum of Natural History, British Museum (Natural History), Field Museum of Natural History, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN), Museo de La Plata, Museum of Comparative Zoology, National Museum of Natural History, Southwestern College Museum of Natural History (SC), and the University of Michigan Museum of Zoology for enabling us to examine specimens in their care; the authorities of the University of Kansas for awarding Humphrey a half-year sabbatical and subsequent research leave; the administration of Southwestern College for providing Thompson with a half-year research leave; the Kansas University Endowment Association, Southwestern College, Dr. and Mrs. W. Saul, Prof. M. C. Thompson, Mr. and Mrs. L. A. Osborne, Dr. R. T. Peterson, Dr. T. Mastin, Mr. R. Hamilton and the Humphrey family for funds that made the 1979 field research possible.

This study was partially supported by National Science Foundation grant no. DEB-8012403.

#### LITERATURE CITED

- BLAKE, E. R. 1977. Manual of Neotropical Birds. Vol. 1, Spheniscidae (Penguins) to Laridae (Gulls and Allies). The University of Chicago Press xix + 674.
- BO, N. A. 1958. Nota sobre una colección de aves del este de Chubut. Rev. del Museo de La Plata (Nueva Serie). Secc. Zool., VII:35-50.
- BOSWALL, J. AND MACIVER, D. 1979a. Nota sobre el Pato Vapor Volador (*Tachyeres patachonicus*). Hornero, 12:75-78.
- BOSWALL, J., AND MACIVER, D. 1979b. Casual Notes on the Flying Steamer Duck. Original English version of Ms. published in Spanish as 1979a; Ms. available to *bona fide* investigators from Boswall, Birdswell, Wraxall, Bristol, BS19 1JZ, England.
- BOSWALL, J. AND PRYTHERCH, R. J. 1972. Some notes on the birds of Point Tombo, Argentina. Bull. Brit. Orn. Cl., 92:118-129.
- DACIUK, J. 1977. Notas faunísticas y bioecológicas de Península Valdez y Patagonia. VI. Observaciones sobre áreas de nidificación de la avifauna del litoral marítimo patagónica (Provincias de Chubut y Santa Cruz, Rep. Argentina). Hornero, 11:361-376.
- HUMPHREY, P. S. AND LIVEZEY, B. C. In press. Notes on molts and plumages of flying steamer ducks.
- JEHL, J. R. JR., RUMBOLL, M. A. E., AND WINTER, J. P. 1973. Winter bird populations of Golfo San Jose Argentina. Bull. Brit. Orn. Cl., 93:56-63.
- JOHNSCARD, P. 1979. Family Anatidae, in Check-list of Birds of the World, Vol. I, Second Edition. Revision of the work of James L. Peters. Mayr, E. and Cottrell, G. W. (eds.) Museum of Comparative Zoology, Cambridge, Mass. Pp. xvii + 547.

- MURPHY, R. C. 1936. Oceanic birds of South America, Vol. II, American Mus. Nat. Hist., New York. Pp. 641-1245.
- OLROG, C. 1979. Nueva lista de la avifauna Argentina. Opera Lilloana, 27:1-297.
- SCOTT, W. E. D. AND SHARPE, R. B. 1904-1915. Reports of the Princeton University Expeditions to Patagonia, 1896-1899. Vol. II. 1, Ornithology. Pp. xii + 504.
- TODD, F. S. 1979. Waterfowl: Ducks, Geese and Swans of the World. Harcourt-Brace Jovanovich, New York.
- WELLER, M. W. 1976. Ecology and behaviour of steamer ducks. Wildfowl 27:45-53.
- ZAPATA, A. R. P. 1967. Observaciones sobre aves de Puerto Deseado, Provincia de Santa Cruz. Hornero, 10:351-378.
- ZAPATA, A. R. P. 1969. Aves observadas en el Golfo San Jorge, Provincias de Chubut y Santa Cruz, Argentina. Zoologia Platense, 1:21-27.